

below zero, at Hamilton on the 30th. The average precipitation was 0.29, or 0.30 below normal; the greatest monthly amount, 0.78, occurred at Forman, and the least, trace, at Ashley, Coal Harbor, Ellendale, Glenullin, Larimore, and Steele.—*B. H. Bronson.*

*Ohio.*—The mean temperature was 27.8°, or nearly normal; the highest was 66°, at Portsmouth on the 4th, and the lowest, 15° below zero, at Colebrook and Garrettsville on the 31st. The average precipitation was 3.01, or nearly normal; the greatest monthly amount, 6.53, occurred at Hanging Rock, and the least, 1.44, at Annapolis.—*J. Warren Smith.*

*Oregon.*—The mean temperature was 38.6°, or 3.6° above normal; the highest was 78°, at Langlois on the 25th, and the lowest, 10° below zero, at Weston on the 3d. The average precipitation was 6.49, or 0.37 above normal; the greatest monthly amount, 30.08, occurred at Glenora, and the least, 0.23, at Prineville.—*B. S. Pague.*

*Pennsylvania.*—The mean temperature was 26.6°, or 1.4° below normal; the highest was 66°, at Pittsburg on the 4th, and at Lycippus on the 5th, and the lowest, 21° below zero, at Dushore on the 2d. The average precipitation was 3.05, or 0.15 below normal; the greatest monthly amount, 4.84, occurred at Browers Lock, and the least, 0.82, at Franklin.—*T. F. Townsend.*

*South Carolina.*—The mean temperature was 44.4°, or 1.6° below normal; the highest was 78°, at Gillisonville on the 6th, and the lowest, 17°, at Little Mountain on the 2d and at Walhalla on the 7th. The average precipitation was 4.72, or 0.37 above normal; the greatest monthly amount, 6.75, occurred at Holland, and the least, 2.84 at Charleston.—*J. W. Bauer.*

*South Dakota.*—The mean temperature was 15.0°, or about 4.0° above normal; the highest was 68°, at Desmet on the 24th, and the lowest, 32° below zero, at Wessington Springs on the 30th. The average precipitation was 0.40, or 0.28 below normal; the greatest monthly amount, 2.65, occurred at Rochford, and the least, trace, at Forestburg, Gannvalley, and Wessington Springs.—*S. W. Glenn.*

*Tennessee.*—The mean temperature was 38.3°, or slightly above normal; the highest was 72°, at Jackson on the 4th, and the lowest, 2° below zero, at Madison on the 31st. The average precipitation was 6.02, or nearly 1.00 above normal; the greatest monthly amount, 8.75, occurred at Union City, and the least, 2.06, at Silverlake.—*H. C. Bate.*

*Texas.*—The mean temperature for the State, determined by comparison of 41 stations, well distributed throughout the State, was 1.8° below the normal; the temperature was nearly normal along the coast,

while there was a general deficiency over the interior; maximum, 91° at Fort Ringgold on the 21st; minimum, 3° below zero at Amarillo on the 31st. The average precipitation for the State, determined by comparison of 51 stations, distributed throughout the State, was 0.32 below the normal; there was a deficiency ranging from 1.00 to 2.38 over central Texas, the eastern portion of southwest Texas and the extreme western portion of the coast district, while there was an excess generally elsewhere, which, however, was light except along the east coast, where the excess ranged from 1.83 to 6.70, the greatest being at Galveston. The rainfall at Galveston, 10.39, is the heaviest on record for the month of January since the opening of the station in 1871. The weather was generally favorable for wheat. Too much rain over the east coast injured strawberry plants and retarded garden work.—*I. M. Cline.*

*Utah.*—The mean temperature was 27.7°; the highest was 70°, at St. George on the 27th, and the lowest, 21° below zero, at Woodruff on the 10th. The average precipitation was 1.14; the greatest monthly amount, 3.96, occurred at Huntsville, and the least, 0.10, at Frisco and Grove.—*L. H. Murdoch.*

*Virginia.*—The mean temperature was 35.5°, or 1.4° below normal; the highest was 75°, at Sunbeam on the 6th, and the lowest, 12° below zero, at Woodstock on the 2d. The average precipitation was 3.36, or 1.02 below normal; the greatest monthly amount, 5.34, occurred at Warrenton, and the least, 1.31, at Stephens City.—*E. A. Evans.*

*Washington.*—The mean temperature was 34.4°, or nearly normal; the highest was 66°, at Waterville on the 27th, and the lowest, 36° below zero, at Usk on the 6th. The average precipitation was 7.36, or about 2.00 above normal; the greatest monthly amount, 24.28, occurred at Clearwater, and the least, 1.29, at Loomis.—*G. N. Salisbury.*

*Wisconsin.*—The mean temperature was 13.9°, or nearly normal; the highest was 52°, at Prairie du Chien on the 26th, and the lowest, 46° below zero, at Osceola on the 29th. The average precipitation was 0.86, or 0.23 below normal; the greatest monthly amount, 1.70, occurred at Shawano, and the least, 0.15, at Brodhead.—*W. M. Wilson.*

*Wyoming.*—The mean temperature was 22.7°, or slightly above normal; the highest was 60°, at Hecla on the 10th and at Sundance on the 13th and 18th, and the lowest was 21° below zero, at Sheridan on the 5th. The average precipitation was 1.50, or about 0.75 above normal; the greatest monthly amount, 6.40, occurred at Sherman, and the least, 0.10, at Wamsutter.—*W. S. Palmer.*

## SPECIAL CONTRIBUTIONS.

### LIST OF RECENT TITLES OF PAPERS BEARING ON METEOROLOGY.

W. F. R. PHILLIPS, in charge of Library, etc.

The subjoined list of titles has been selected from the contents of the periodicals and serials recently received in the library of the Weather Bureau. The titles selected are of papers or other communications bearing on meteorology or cognate branches of science. This is not a complete index of the meteorological contents of all the journals from which it has been compiled; it shows only the articles that appear to the compiler likely to be of particular interest in connection with the work of the Weather Bureau:

*Naturwissenschaftliche Rundschau, Braunschweig, 14 Jahrgang.*

Trabert, Wilh. Der Zusammenhang zwischen den Erscheinungen des Erdmagnetismus und den elektrischen Vorgängen in der Atmosphäre, p. 41. [From *Metl. Zeit.*]

*Comptes Rendus, Paris, Tome 128.*

Berthelot. Sur la marche générale de la végétation; plante développée à l'ombre et au soleil; regain. p. 139.

Poincaré, M. A. Mouvements barométriques sur l'orthogonal du méridien de la Lune, p. 328.

Tillo, A. de. Résultats des observations météorologiques faites dans la dépression au centre du continent asiatique, (station Lukishoun). p. 154.

Voielland, M. Chute de grêle et trombe observées à Bizerte. p. 327.

*Nature, London, Vol. 59.*

MacMahon, P. A. Mirage. p. 259.

*Das Wetter, Berlin, Jan. 1899.*

Arendt, Theodor. Ueber die Zunahme der Blitzgefahr. p. 1. — Zum Polarlicht, vom 9, September, 1898. p. 20.

Mienardus, Wilh. Der mitteleuropäische Winter und seine Beziehungen zum Golfstrom. p. 8.

Plumandon, J. R. Der Regen. p. 14. [From *Ciel et Terre.*]

*Petermann's Mitteilungen, Gotha, 45 Band.*

Supan, A. Vertikale Temperaturabnahme in der freien Atmosphäre. p. 19.

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*Ciel et Terre, Bruxelles, 19me. année.*

Bentley, W. A., Perkins, G. H. Les cristaux de la neige. p. 543. [From *Appletons Popular Science Monthly.*]

Lancaster, A. La gelée et les anticyclones. p. 579.

Moye, M. Les étoiles filantes et la météorologie. p. 526.

Ramsey, A. La théorie cinétique des gaz et quelques-unes de ses conséquences. p. 513, also p. 571.

St. Hepites. Météorologie de l'Etna. p. 563.

*Annales de Géographie, Paris, 1899.*

Martonne, E. de. Sur un nouveau mode de représentation du régime des pluies dans les contrées intertropicales. p. 84.

*Appleton's Popular Science Monthly, New York, Vol. 54.*

Smith, Stephen. Vegetation a Remedy for the Summer Heat of Cities. p. 433.

*National Geographic Magazine, Washington, Vol. 10.*

Garriott, E. B. West India Hurricane of September 10-11, 1898. p. 17.

*Philosophical Magazine, London, Vol. 47.*

van Rijckevorsel. On the Analogy of some Irregularities in the Yearly Range of Meteorological and Magnetic Phenomena. p. 57.

*Journal of School Geography, Lancaster, Vol. 3.*

Fenneman, N. M. Climate of the Great Plains. p. 1, also p. 46.

*Aeronautical Journal, London, Vol. 3.*

Eddy, W. A. Some Kite Records in the United States. p. 15.

Hazen, H. A. Glaisher's Highest Balloon Ascension. p. 13.

Rotch, A. L. Progress in the Exploration of the Air with Kites at the Blue Hill Observatory. p. 17.

*Scottish Geographical Magazine, Edinburgh, Vol. 14.*

Newell, F. H. The Hydrography of the United States. p. 9.

*Engineering News, New York, Vol. 41.*

—The Mississippi River Floods and Methods for their Control.

5. 50. [Abstract of report of the Committee on Commerce, U. S. Senate.]

Lippincott, J. B. Low Water Measurements in the State of California during the Summer of 1898. p. 12.

## HINTS TO OBSERVERS OF SHOOTING STARS.

By WILLIAM HARKNESS, Professor, U. S. Navy.

The star showers of November and other months attract